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ABSTRACT

It is proposed here that second language learners can acquire a system of reflexive binding, both local and long-distance, that is different from that found in their native language, and individual subject data are offered to support this claim. First, some general properties of the syntactic behavior of reflexives and reflexive constructions are outlined, and results of previous second-language research on acquisition of English reflexives are summarized. Data from another researcher's earlier study are then re-analyzed in terms of individual subjects, and it is demonstrated that some of the second language learners acquired a system of reflexive binding that is different from both the native language and the target language. Finally, the claim, made in other research, that transfer is the only developmental factor in the acquisition of English reflexives by non-native speakers is challenged. Contains 32 references. (MSE)

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Universal Grammar and L2 acquisition of reflexive binding: Some learners acquire a non-L1/non-Target system*

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1. Introduction

Research investigating the acquisition of English reflexives by second language learners whose native language instantiates long-distance binding (e.g., Chinese, Japanese, Korean) has shown that some of these learners are able to acquire local binding (Hirakawa 1990; Thomas 1989, 1991a; Eckman 1994; Lakshmanan and Teranishi 1994). This finding has been interpreted as evidence that second language learners are able to reset parameters, and therefore, have access to Universal Grammar. Recently, this interpretation has been challenged by Yuan (1994). Yuan argues that the reflexive binding results can be explained in terms of transfer from the native language, not parameter setting, because the native languages of these speakers have both local and long-distance reflexives.

According to Yuan, then, L2 learners who exhibit long-distance binding in the interlanguage have transferred properties of the long-distance reflexive found in the L1. Similarly, L2 learners who exhibit local binding have transferred properties of a different, local reflexive from the L1. While I do not disagree with Yuan's suggestion that transfer cannot be ruled out in these two cases, I argue in this paper that something else is also going on, at least with some of these second language learners. In particular, I show that some learners acquire a system of reflexive binding that is not found in the native language, and in fact, is not found in the target language either. Consequently, this reflexive binding system cannot simply be the result of transfer; some development must have taken place. Further, this system appears to be one that is found in other languages, suggesting that UG is involved in its acquisition.

The suggestion that second language learners can acquire an "intermediate" binding system is not a new one. Finer (1991, see also Finer and Broselow 1986), claimed that his L2 learners had acquired an intermediate setting of the Manzini and Wexler's (1987) Governing Category Parameter.[1] However, Finer's data is reported and analyzed only in terms of group means, making it impossible to ascertain the nature of the grammatical system that these learners may have acquired. In this paper, I present an analysis of individual subject data that substantiates the claim that second language learners can acquire a system of reflexive binding that is different from that found in the native language. The data I report on are drawn from the Hirakawa (1990) study.

The paper is organized as follows. I first outline some general properties of the syntactic behavior of reflexives. Next, I briefly summarize results of previous L2 research on the acquisition of English reflexives. I then add to these results by presenting a re-analysis of the data reported in Hirakawa (1990) in terms of individual subjects. I show that some of her second language learners acquire a system of reflexive binding that is different from both the native language and the target language. Finally, I address Yuan's claim that transfer is the only developmental factor in the acquisition of English reflexives by non-native speakers, concluding that this claim cannot be maintained.

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[1] Hirakawa (1990) considered, but rejected, the possibility that her learners had also set the Governing Category Parameter (GCP) to an intermediate value. Because her learners allowed much more long-distance binding out of tensed clauses than did Finer's subjects, she concluded that her learners maintained the "widest" setting of the GCP: the setting found in the native language.

2. Reflexive binding domains

There are many proposals in the literature that are concerned with capturing the facts of binding, for example, the parameterized approach of Manzini and Wexler (1987, see also Wexler and Manzini 1987), the LF-movement approach (Pica 1987, Cole, et al. 1990, Reinhart and Reuland 1993), and the relativized subject approach of Progovac (1992, 1993). A major focus of these binding proposals has been to capture the variation in reflexive binding domains that is exhibited both cross-linguistically and within the grammar of a single language. Although the proposals differ in detail, three important generalizations have emerged from this syntactic research. These generalizations are listed in (1).

(1) Reflexive binding generalizations:
1. Binding domains vary within and across languages.
2. Reflexives that undergo nonlocal syntactic binding are morphologically simplex.
3. Nonlocal syntactic binding of reflexives is subject-oriented.

First, not all reflexives exhibit the same binding behavior. Generally, a major distinction is drawn between local and nonlocal binding. Following Chomsky (1986), the local binding domain can be defined in terms of the notion of Complete Functional Complex, as given in (2).

(2) Local binding domain: (Chomsky 1986: 169)
The local domain for an anaphor or a pronominal α is the least Complete Functional Complex (CFC) containing a lexical governor of α. A CFC is a maximal projection within which all grammatical functions compatible with its head are realized within it.

Pronouns must be free within the local domain, according to Principle B of the standard binding theory. While some reflexives, like the English reflexives, must be bound within the local domain, other reflexives permit what has been called long-distance or nonlocal binding, that is, binding outside the local domain. The phenomenon of nonlocal reflexive binding is an active topic of syntactic research. In this paper, I have purposely avoided adopting any particular theory of binding. Instead, I focus on the descriptive generalizations concerning what possibilities are allowed or disallowed by a particular reflexive, and how these properties are or are not acquired by second language learners.

With that said, in this paper, I distinguish three domains of reflexive binding, although I realize that there is more variation than I am representing here. I refer to these domains with the neutral terms Type 1, Type 2, and Type 3, and reflexives which are associated with these domains as Type 1, Type 2, and Type 3 reflexives. Please refer to the schemata in (3). First, Type 1 reflexives are local reflexives, which must be bound within the local domain. Type 2 reflexives can be bound by an antecedent outside an infinitival clause, but not outside a finite clause. Finally, Type 3 reflexives can be bound by an antecedent outside a finite clause.

(3) Type 1: $[_{clause}\ XP_i \ldots V \ldots [_{clause}\ XP_j \ldots V\pm tense \ldots reflexive*_{i/j} \ldots]$
Type 2: $[_{clause}\ XP_i \ldots V \ldots [_{clause}\ XP_j \ldots V\text{-}tense \ldots reflexive_{i/j} \ldots]$
$[_{clause}\ XP_i \ldots V \ldots [_{clause}\ XP_j \ldots V\text{+}tense \ldots reflexive*_{i/j} \ldots]$
Type 3: $[_{clause}\ XP_i \ldots V \ldots [_{clause}\ XP_j \ldots V\pm tense \ldots reflexive_{i/j} \ldots]$

Examples illustrating the three types of reflexives, drawn from English, Russian, and Japanese, are given in (4)-(6). As shown in (4), the English reflexive *himself*, a Type 1 reflexive, cannot be bound outside the embedded clause, irrespective of whether the embedded clause is tensed or infinitival. However, the Russian reflexive *svoj*, which is a Type 2 reflexive, can be bound outside the infinitive in (5a), but not outside the finite clause in (5b). Finally, example (6) shows that the Japanese reflexive *zibun* can be bound by an antecedent outside a tensed clause.

(4) Type 1: English *himself*

a. Fred$_i$ believes John$_j$ to have hurt *himself*$_{*i\ j}$

b. Fred$_i$ believes that John$_j$ hurt *himself*$_{*i\ j}$

(5) Type 2: Russian *svoj* (Progovac 1992: ex. 8, 9)

a. Profesor$_i$ poprosil assistenta$_j$ čitat' *svoj*$_{i\ j}$ doklad
professor asked assistant-ACC to-read self's report-ACC
'The professor$_i$ asked the assistant$_j$ to read self's$_{i,j}$ report.'

b. Vanja$_i$ znaet čto Volodja$_j$ ljubit *svoj-u*$_{*i\ j}$ žen-u
Vanja knows that Volodja loves self's-ACC wife-ACC
'Vanja$_i$ knows that Volodja$_j$ loves self's$_{*i\ j}$.'

(6) Type 3: Japanese *zibun* (Thomas 1991a: ex. 7)

Alice$_i$ wa Sue$_j$ ga *zibun*$_{i,j}$ o aisite iru to omotte iru
Alice TOP Sue NOM self ACC love is COMP think is
'Alice$_i$ thinks that Sue$_j$ loves self$_{i,j}$.'

The second important generalization, listed in (1), is that nonlocal syntactic binding is restricted to morphologically simplex 'bare' reflexives such as Japanese *zibun*, Russian *svoj*, or Chinese *ziji*. Morphologically complex 'phrasal' reflexives such as English *himself*, Japanese *kanojo zisin* ('herself'), or Chinese *ta ziji* ('himself') cannot participate in nonlocal syntactic binding.

Third, nonlocal binding is 'subject-oriented', that is, only a subject (and not an object) may serve as the antecedent of a nonlocally bound reflexive. In other words, long-distance binding to an object is ruled out. Locally bound reflexives, on the other hand, may select either a subject or an object as an antecedent.[2]

In this paper, I focus mainly on the first of the generalizations stated in (1): long-distance binding domains vary across and within languages. It is this variation that has made the domain of reflexive binding a focus of many L2 acquisition studies.

3. Prior research on L2 Acquisition on Reflexive Binding

Second language studies on reflexive binding have been conducted within several different binding frameworks, have employed a variety of methodologies, and have examined different acquisition scenarios. Yuan (1994), in his remarks, specifically focuses on studies investigating the acquisition of English reflexives by native speakers of Japanese, Chinese, and Korean. Yuan discusses the following studies: Finer and Broselow 1986, Finer 1991, Hirakawa 1990, and Thomas 1989, 1991a. Additional studies include Eckman 1994, Lakshmanan and Teranishi 1994, and White in press. This particular experimental scenario addresses the question of whether or not L2 learners whose native language exhibits Type 3 long-distance binding are able to acquire the Type 1 local binding characteristics of English; that is, will the L2 learners disallow long-distance binding in the interlanguage. These studies have converged on a number of results, which are summarized in (7).

(7) Summary of L2 reflexive binding results

- Some L2ers exhibit Type 1 binding in the L2 (rejecting Type 3 binding).
- Some L2ers exhibit Type 3 binding in the L2 (possibly transferred from the L1).

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[2] There are some exceptions to this generalization. For example, the Chinese long-distance reflexive *ziji* may be bound by a subject NP contained within an inanimate subject NP (e.g., *John* in a phrase like *John's pride* may bind a long-distance reflexive) (Huang and Tang 1988). In this case, both the subject-orientation generalization and the general c-command requirement on binding are violated. Additionally, for some reflexives, local binding is also subject-oriented; according to Huang and Tang 1988, this is the case for Chinese *ziji*.

- Group data show higher incidence of long-distance binding out of infinitivals than out of tensed clauses.

Before discussing these results, I would like to first briefly address the issue of preferences (see also Thomas 1991b, 1995 and White et al. 1995 for discussion of this issue). As linguists, we recognize that sentences involving anaphora are often ambiguous. However, linguistically-naive subjects who participate in our research, independent of whether they are tested on their native language or on a second language, are notoriously bad at reporting multiple interpretations. Even when subjects receive training to detect ambiguity, or the experimental design is set up to directly present learners with multiple interpretations (e.g., the truth-value judgment task), still, learners seem not able to recognize alternative interpretations.[3] The problem this creates, then, is the following: if subjects are really only reporting preferential interpretations, how do we interpret the data? Can we assume that a subject who only allows a reflexive to be locally bound actually has a grammar that disallows long-distance binding, or does the subject just have a really strong preference for local binding? In other words, can a preference against long-distance binding be interpreted as a grammatical constraint that is part of the learner's interlanguage?

L2 research on reflexive binding, up to now, has generally proposed claims about a learner's grammar based on the collected data, either implicitly or explicitly assuming that the data reflects what the learner's grammar actually allows. In my view, this assumption is not completely unreasonable. For example, if a learner nas 10 opportunities to pick a long-distance antecedent for a reflexive, but the learner never does, then it seems to me that it isn't unreasonable to assume the learner has a grammar that rules out long-distance binding. However, it is important to be aware of this assumption, since it underlies virtually all the work on reflexive binding to date, including the data on which the results in (7) are based, and the data that I present in section 4.

With that in the back of our minds, let me turn to discussing the results given in (7). First, it has been found that at least some L2 learners are able to acquire the correct local binding characteristics of English reflexives. For example, Hirakawa (1990) states that 10 of her 65 native Japanese learners perform 100% correctly, never making any long-distance binding errors. Eckman (1994) found that all but 2 of his 25 learners, which were drawn from a variety of native language backgrounds, including Japanese and Mandarin Chinese, exhibited local binding in their L2 English. Lakshmanan and Teranishi (1994) also found that a subgroup of their Japanese learners of English (14 out of 34) performed 100% correctly. Note that not only do such learners consistently select local antecedents for English reflexives, but they also appear to *reject* nonlocal binding of the reflexive,[4] even though such a possibility is found in the native language. It would appear, then, that these learners have deduced the knowledge that long-distance binding is impossible in the L2, a negative constraint, for which there is no positive evidence in the input.[5]

However, not all subjects acquire local binding (or at least they hadn't done so by the time of testing). Many subjects exhibit Type 3 binding, as found in the L1. In the Hirakawa study, the remaining 55 learners allow English reflexives to be long-distance bound. Other studies have also

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[3] Individual subject variation is relevant here: some subjects are much better at detecting and reporting ambiguity than others. In the experiment reported on in MacLaughlin (1995), some English control subjects consistently accepted multiple interpretations on the pronoun sentences, while others never accepted more than one interpretation. Note that an analysis in which all data were considered as a group would not reveal this variation, so again, this is another situation where individual analysis is needed.

[4] Assuming the "preference" against selecting a nonlocal antecedent can be interpreted as rejection.

[5] Current theories of reflexive binding propose a variety of factors that combine to yield the binding properties instantiated in a particular construction. Through the interaction of these factors, it is possible that positive evidence is available to trigger 'unlearning' of long-distance binding (e.g., evidence that a reflexive is morphologically complex, and hence, cannot undergo long-distance binding). See White (1991, in press) and White, Hirakawa, and Kawasaki (1995) for studies investigating triggering in L2A.

reported varying incidence of nonlocal binding (Finer and Broselow 1986; Thomas 1989, 1991a; Finer 1991; Bennett 1994; Lakshmanan and Teranishi 1994; White in press).

Finally, studies that have included both tensed and infinitival test sentences (Finer and Broselow 1986, Hirakawa 1990, Finer 1991, Bennett 1994, White in press) have reported an asymmetry in subjects' performance on the two types of sentences. In particular, subjects show a higher incidence of long-distance binding out of infinitivals than out of tensed clauses. However, since this trend has only been reported as group data, it is difficult to evaluate its significance with respect to the actual grammars of these learners. In the next section, I present evidence that this trend is a reflection of a subgroup of learners who have acquired a Type 2 grammar.

4. Re-analysis of Hirakawa (1990)

In what follows, I present a re-analysis of Hirakawa's (1990) data, focusing on the reflexive binding patterns exhibited by each individual subject. This re-analysis is made possible because Hirakawa provides the individual responses for each subject to each test item in an appendix to her paper.

Subjects: Hirakawa tested 65 native Japanese speakers learning English as a second language, as well as 20 native English controls and 22 native Japanese controls. Experimental subjects ranged in age between 15 and 19, and were drawn from 4 different schooling levels, or grades.[6] Subjects were considered to all have a similar background with respect to the age at which they had started learning English and the amount of exposure to English. The subjects had received no explicit instruction concerning the behavior of English reflexives in their classes.

Materials: Subjects were pre-tested to ensure that they had mastered the structures and vocabulary included in the actual test. The test consisted of a multiple-choice grammaticality judgment test, containing five sentence types, as summarized in (8). The first two sentence types involve finite embedded clauses, with either two or three clauses total (that is, either one or two levels of embedding). Types C and D contain non-finite embedded clauses, again with either one or two levels of embedding. The fifth sentence type, consisting of a single clause containing a subject, an indirect object, and a reflexive, was designed to see if learners would permit binding to a non-subject within the immediate local domain. This sentence type is excluded from further discussion.

(8) Hirakawa's sentence types (5 tokens each) (Hirakawa 1990: 70)
- A. *2 clauses; finite embedded clause*
  John said that Bill hit himself.
- B. *3 clauses; finite embedded clause*
  Mary remembers that June said that Alice blamed herself.
- C. *2 clauses; non-finite embedded clause*
  Mary asked Ann to introduce herself.
- D. *3 clauses; non-finite embedded clause*
  Ann knows that Mary told June not to hate herself.
- E. *One clause with indirect object*
  Bob talked to Paul about himself.

The test contained 5 tokens of each sentence type. Individual test items were presented as shown in (9). Subjects were asked to indicate who *himself* or *herself* referred to by circling one of the choices provided.

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[6] My interpretation is that the grades are based on age and general level of schooling, analogous to the grade system in the US; they are not based on English proficiency.

(9) Sample test item (Hirakawa 1990: 70)
John said that Bill hit *himself*.
a. John
b. Bill
c. either John or Bill
d. someone else _____
e. don't know

English controls and Japanese controls were tested on the same sentences in English and Japanese respectively, although choices of 'don't know' were removed for the control subjects.

Group results. Before proceeding with the individual analysis, let me first summarize the group results (but see Hirakawa (1990) for detailed discussion). The table in (10) shows the percentage of local and long-distance binding responses in finite and non-finite domains, for the experimental and the 2 control groups. Note that Hirakawa found no significant grade effect, so the results of the 4 grade levels are collapsed into a single L2 group.

(10) Responses of L2 subjects, in percentages

	E on E (n=20)	**J on E (n=65)**	J on J (n=22)
Finite			
local	98	**72.5**	18
long	2	**27.5**	82
Nonfinite			
local	98	**55**	15
long	2	**45**	85

The figures are adapted from Hirakawa's table 6. Responses of 'long' and 'local or long' have been collapsed into the single category 'long'. Responses from 2-clause and 3-clause items have been combined. E on E = native English subjects tested on English sentences. J on E = native Japanese subjects tested on English sentences. J on J = native Japanese subjects tested on Japanese sentences. Responses of 'don't know' (n=5) were removed by Hirakawa. There were no responses of 'someone else'.

The major group results are summarized in (11). As the table in (10) shows, the L2 learners, as a group, allow long-distance binding, in both finite and infinitival environments. However, their percentage of long-distance binding is lower than what is found with the native Japanese controls. Thus, at the group level, the L2 learners appear to differ from both the native English and the native Japanese controls. Notice also that the L2 learners make more long-distance binding errors in infinitivals than in finite clauses.[7] Finally, learners made more non-local binding errors in the 3-clause test items than in the 2-clause test items, although the difference is statistically significant only for the finite clause test items (the relevant numbers aren't shown).

(11) Summary of group results
- L2ers allow long-distance binding in both finite and infinitival environments.
- L2ers differ from both control groups.
- L2ers allow more long-distance binding in infinitival than in finite environments.
- L2ers make more long-distance binding errors in 3-clause items than in 2-clause items (significant difference only for finite clause test items; figures not shown).

Individual results. Let's now turn to the individual analysis. I analyzed the response pattern of each subject individually, as follows. I first evaluated the subject's response pattern to each of the 4 sentence types separately. A subject was classified as exhibiting a particular binding pattern (Type 1, Type 2, or Type 3) on a sentence type if the subject performed consistently to a certain

[7] This result is similar to that of Finer (1991), whose subjects were slightly over 90% accurate on finite clauses, but less accurate on infinitivals: 88% for native Korean speakers, 76% for native Japanese speakers.

criterion level. By consistent, I mean whether or not the subject consistently disallowed a certain response, for example, long-distance binding out of tensed clauses. Subjects were evaluated twice, using two different criteria: 100% (or 5/5 consistent responses) and 80% (or 4/5 responses). For example, a subject would be classified as exhibiting Type 1 local binding on bi-clausal infinitival (C) sentences if the subject bound the reflexive locally in all 5 test sentences, for the 100% criterion, or on at least 4 out of the 5 test sentences, for the 80% criterion. If the subject showed 1 or more instances of long-distance binding in these infinitival sentences, for the 100% criterion, or 2 or more instances for the 80% criterion, the subject would be classified as Type 2.

After ascertaining subjects' response patterns on each sentence type, I then combined the results of the 4 sentence types in order to classify the subject as exhibiting a Type 1, Type 2, or Type 3 grammar. For example, a subject who exhibited Type 3 binding in the finite sentences and Type 2 binding in the infinitival sentences would be classified as Type 3, when these results are combined. Note that because Hirakawa did not include any sentences to test for UG-incompatible possibilities, in particular, long-distance binding to object, and because subjects never selected the 'someone else' choice, in combination with the way in which I have analyzed the data, all learners end up being classified into one of these 3 grammar types.

The results are summarized in the table in (12). The numbers in the table show the number of subjects, out of 65 total, that are classified into each of the three grammar types. The middle section only includes the 2 clause test items in the analysis, while the last section includes both 2 clause and 3 clause test items. Recall that Hirakawa did find a difficulty effect for the 3 clause items. The first row of figures employs the 100% criterion, while the second row employs the 80% criterion.

(12) Individual subject results

Criterion	2 clause sentences only			2 and 3 clause sentences		
	Type 1	*Type 2*	*Type 3*	*Type 1*	*Type 2*	*Type 3*
100% (5/5)	16	11	38	10	7	48
80% (4/5)	26	17	22	18	12	35

This table shows the number of Hirakawa's L2 subjects (n=65) who exhibit Type 1, Type 2, or Type 3 grammars. The middle section only includes the 2 clause test items (2 sentence types, 10 test items in all), while the last section includes both 2 clause and 3 clause test items (4 sentence types, 20 test items in all). The first row of figures employs a 100% consistency criterion (5/5 consistent responses to a sentence type), while the second row employs an 80% criterion (4/5 consistent responses to a sentence type).

As Hirakawa had noted in her paper, 10 subjects responded 100% correctly, and the table shows that 10 subjects exhibit a Type 1 grammar over both 2 clause and 3 clause test sentences. In other words, some of her subjects have acquired Type 1 (local) binding.

My analysis of Hirakawa's data reveals two distinct patterns of non-target-like long-distance binding. One sub-group of subjects exhibits a Type 3 binding system, analogous to that found in the native language. However, as you can see in the table, another sub-group appears to have acquired a Type 2 system. That is, some subjects permit reflexive binding outside an infinitival clause, while consistently disallowing reflexive binding outside a tensed clause. The possibility of long-distance binding out of tensed clauses, while present in the native language, has apparently been abandoned in the interlanguage. This is a significant and important result. Since this system of Type 2 binding is not found in the native language, it cannot simply be the result of transfer.

To summarize, I have presented evidence that L2 learners of English can acquire any one of 3 binding systems. Crucially, this evidence is based on an analysis of individual subject performance, aimed at ascertaining the nature of the individual grammars of each learner. This level of analysis permits us to revise the summary of reflexive binding results originally given in (7) as shown in (13), by adding a stronger statement concerning the previously reported tensed/infinitival asymmetry: some learners exhibit a Type 2 grammar.

(13) Summary of L2 reflexive binding results (revised)
- Some L2ers exhibit Type 1 binding in the L2 (they reject Type 3).
- Some L2ers exhibit Type 3 binding in the L2 (possibly transferred from the L1).
- Group data show higher incidence of long-distance binding out of infinitivals than out of tensed clauses.
- Some L2ers exhibit Type 2 binding in the L2.

5. Yuan's interpretation

Given these results, let's now examine Yuan's (1994) claims about the role of transfer in the acquisition of English reflexives (summarized in (14)). Yuan (1994) argues that the L2 reflexive binding results do not provide any evidence for parameter setting or access to Universal Grammar. He claims that these results only show that L2 learners transfer parameter settings from the L1. As he correctly points out, the native languages of the subjects in these studies contain both Type 1 (local) and Type 3 (long-distance) reflexives. Apparently, then, learners who correctly acquire the local binding properties of English have simply transferred the local reflexive from the L1; while learners who allow long-distance binding have transferred properties of the long-distance reflexive.

(14) Yuan's (1994) interpretation:
- L2ers exhibiting Type 3 binding in the L2 have transferred the Type 3 reflexive.
- L2ers exhibiting Type 1 binding in the L2 have transferred the Type 1 reflexive.
- The tensed/infinitival asymmetry (Type 2 binding) is the result of a mis-analysis of the infinitival structure.

What Yuan cannot account for is the result that some learners acquire Type 2 grammars, since this is not something that is found in the L1. Yuan is not unaware of this challenge to his claims. In discussing the group results reported by Finer and Broselow (1986) and Finer (1991), Yuan (1990: 543) acknowledges that "this infinitive/tensed asymmetry cannot be due to the influence of the learners' L1." However, Yuan tries to preserve his transfer claim by suggesting that learners are mis-analyzing the infinitival structures, such that it only looks like they have a Type 2 binding system. Drawing on an idea discussed (and rejected) by Finer (1991),[8] Yuan suggests that these learners are analyzing the biclausal infinitival structures as mono-clausal structures, in which case, the structure forms a local binding domain within which both the matrix subject and the second noun phrase are possible antecedents. Although it is not clear what syntactic structure the learners would attribute to these infinitivals (Yuan does not present any details), the basic idea is shown schematically in (15a), where the brackets are intended to indicate the local binding domain. Note that because the asymmetry is also exhibited in 3-clause sentences, Yuan would have to allow a structure like that in (15a) to be embedded under another verb. For comparison, the target infinitival structure, and the one which native English speakers presumably have, is shown in (15b).

(15) Yuan (1994) proposes that L2ers mis-analyze infinitival structures.
a. L2ers structure: [Mary asked Ann to introduce herself]$_{\text{local binding domain}}$
b. Target structure: Mary asked Ann [PRO to introduce herself]$_{\text{local binding domain}}$

In other words, Yuan's claim is the following. Learners who appear to exhibit Type 2 grammars actually have Type 1 grammars. They have transferred local binding from the native language. The appearance of Type 2 binding is the result of a mis-analysis of biclausal infinitival structures as monoclausal structures. Apparent Type 2 binding out of infinitival clauses is actually local binding within this mis-analyzed binding domain.

There are several problems with Yuan's interpretation of the Type 2 binding results, summarized in (16).

[8] See also discussions in Finer and Broselow (1986) and Hirakawa (1990).

(16) Problems with Yuan's proposal:

1. Where does the mis-analysis come from?
2. Predicts that L2ers who mis-analyze bi-clausal infinitival structures as mono-clausal should disallow pronominal binding within these structures. This does not appear to be correct (see MacLaughlin 1995).
3. May not be reconcilable with current theories of syntax.
4. UG would have to admit both strucures in (15). This would create a learnability problem.

First, one should question how some (but not all) learners arrive at this mis-analysis, and whether or not they can later acquire the "correct" analysis. If Yuan is to maintain his claim that only transfer is involved, he would presumably have to say that this mis-analysis is somehow derived from the L1. However, Yuan does not address this issue, and I won't speculate about it further.

Second, Yuan's proposal makes an important and testable prediction: learners who mis-analyze infinitivals, as he suggests, should reject binding of pronouns within the mis-analyzed local domain. That is, if the local binding domain is as shown in (15a), and if we replace the reflexive with a pronoun ('her'), learners should not permit the pronoun to be bound by the matrix subject 'Mary,' at least not without violating Principle B of the binding theory. In MacLaughlin (1995), I report experimental data showing that this prediction does not hold.

Third, Finer (1991) considered, and rejected, essentially the same explanation of the infinitival results that Yuan proposes, on the basis that it appears to be incompatible with theories of syntax. Finer specifically discusses Lexical Functional Grammar and Generalized Phrase Structure Grammar, and I refer you to his work for the specifics in relation to those frameworks.[9] However, an analogous problem can be seen to arise within the Principles and Parameters framework. The root of the problem is essentially the following. Principles of argument projection (e.g. the Projection Principle, the Theta Criterion, and X' theory, or their current theoretical equivalents) force a subject to be projected for the embedded verb. In other words, principles of grammar require that the verb phrase *introduce herself* in (15a) be predicated of something (e.g., *PRO*). This constituent (*PRO introduce herself*) would then form a Complete Functional Complex, which would, in turn, define the local binding domain (as shown in (15b)). There is no structure for these infinitival sentences where both a) the structure conforms to the principles of UG, particularly those governing the argument projection and interpretation; and b) the structure consists of a single Complete Functional Complex within which local binding to the 'matrix' subject can take place. If learners are truly assigning some type of mono-clausal analysis that allows local binding to the matrix subject, as Yuan suggests, then they would not be conforming to the principles of UG.

Fourth, as Finer points out, in order to accommodate the mis-analysis possibility, yet still maintain an adequate analysis of native English, a theory of grammar would need to be constructed that would permit both structures in (15). Again, it is not clear how to construct such a theory of grammar. But more importantly, admitting this type of structural ambiguity could create a serious problem for language learnability. One would be faced with the problem of explaining how English speakers are guaranteed to arrive at the correct structural representation.

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[9] To summarize Finer's discussion, within these theories, reflexive interpretation does not work off syntactic structure alone, but at levels of representation that capture argument structure. While it is possible that an incorrect syntactic structure could be attributed to the infinitival clauses, the argument structure representation would be essentially identical to the full bi-clausal representations, because of the principles governing argument structure representation in those theories. In other words, at the relevant level of interpretation, the functional equivalent of a clause boundary would necessarily be traversed if the matrix subject in (15a), for example, were taken to be the antecedent of the reflexive.

Given these problems, I find Yuan's proposal concerning the Type 2 binding results to be untenable. I maintain that the Type 2 learners have acquired a grammatical system which allows long-distance binding, but only outside infinitival clauses. The fact that this system looks similar to what is found in other languages, like Russian, suggests that L2 learners have access to UG. However, it should be noted that Hirakawa's experiment did not include items specifically designed to test for UG-compatability.

6. Ambiguity in Transfer Source

The possibility that L2 learners can transfer *either* the Type 1 or the Type 3 reflexive raises several interesting questions about the nature transfer in general. Essentially, we have a situation where there is ambiguity in the transfer source: the native language contains two types of reflexives from which to transfer. Yuan's interpretation of the data would suggest that learners can differ as to which source they pick for transfer: some transfer the local reflexive, while others transfer the long-distance reflexive. Given this ambiguity, the question arises as to what factors might influence the choice of transfer source.

If the selection were simply random, then we might expect half the learners to pick one source, and half to pick another. Hirakawa (1990) found that only 10 out of 65 (or app. 15%) of her learners seemed to have acquired local binding. Thus only 15% of her learners had selected the local reflexive as the source of transfer (according to Yuan), suggesting that the choice might not be random after all.

Another possible factor might be frequency of occurrence in the native language. According to some native Japanese speakers with whom I have consulted, the Japanese long-distance reflexive *zibun* is much more common than the local reflexive. If frequency were a factor, it still remains to be explained what would lead some learners would transfer the local reflexive.

A second question is whether or not L2 learners can initially transfer one type of reflexive, and then later transfer another. Lakshmanan and Teranishi (1994) suggest that something like this might be possible (although their discussion draws on the notion of *interlingual identification*, not transfer).

7. Other L2 results that challenge Yuan's transfer claims

In this section, I briefly mention some other studies that have reported results that cannot be explained in terms of transfer (see (17)). Some of these studies are cited by Yuan, others are not. First, Thomas (1989) tested both native Spanish and native Chinese learners of English. She found little difference between these two groups; both exhibited a significiant amount of long-distance binding out of finite embedded clauses.[10] The Spanish group's performance cannot be explained in terms of transfer, because Spanish does not have a Type 3 long-distance reflexive. Thomas (1991a) also found that some Spanish speakers allowed Type 3 long-distance binding of English reflexives.[11] This study additionally tested English learners of Japanese, finding that the English speakers allowed long-distance binding in the interlanguage, a property that could not have been transferred from the native language (see also Thomas 1993, 1995 for further discussion and analysis of these data). White, Hirakawa, and Kawasaki (1995) found no L1 effect for French, English, Korean, and Chinese learners of Japanese; about 1/2 of the subjects acquired long-distance binding in the interlanguage. White (in press) reports that both French and Japanese

[10] The Chinese learners selected a non-local antecedent 30.75% of the time in response to pragmatically neutral sentences and 51% of the time in response to the sentences where the non-local antecedent was pragmatically favored. Figures for the Spanish learners on the two sentence types are 40.04% and 50.10%.

[11] These Spanish subjects picked a non-local antecedent between 5% and 25% of the time, less frequently than the Spanish learners in Thomas (1989).

learners of English allow long-distance binding.[12] These studies all represent cases where the L2 learners do something that is not found in the L1.

(17) Other L2 results that challenge Yuan's transfer analysis.
- Thomas (1989): Spanish learners of English allow long-distance binding.
- Thomas (1991a): Spanish learners of English allow long-distance binding.
- Thomas (1991a, 1995): English learners of Japanese allow long-distance binding.
- White, Hirakawa, & Kawasaki (1995): no L1 effect for French, English, Korean, and Chinese learners of Japanese. About 1/2 the subjects acquired long-distance binding.
- White (in press): French learners of English allow long-distance binding.

8. Conclusion

To conclude, I have shown that some second language learners of English exhibit a pattern of reflexive binding that is not found in the native language, nor in the target language, yet one appears to fall within the range of possibilities allowed by UG. Specifically, these learners allow long-distance binding, but only out of infinitival clauses. Thus, it can be said that these learners have given up, or unlearned, long-distance binding out of tensed clauses, a property which is found in the native language. Notably, the system of binding that these learners seem to have acquired is not one that is evident in the L2 input, because English does not allow long-distance syntactic binding of reflexives. The fact that second language learners are able to acquire a binding system that cannot be derived from the native language contradicts the proposal put forth by Yuan (1994) that transfer is the only factor involved in the acquisition of reflexive binding.

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[12] In the case of the French learners of English, the question arises as to where the long-distance binding could be coming from, since it ound in the language input, and it is not part of the native language grammar. White suggests two possibilities: 1) the French speakers "recognize that the L2 does not have a reflexive clitic but assume that the English reflexive is nevertheless a head (because reflexive clitics are heads), thus permitting nonlocal binding"; or 2) the X^0 anaphor represents the unmarked case.

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